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Vegetable

Outlook and Situation Report

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Increased acreage and stocks temper vegetable prices. . . .

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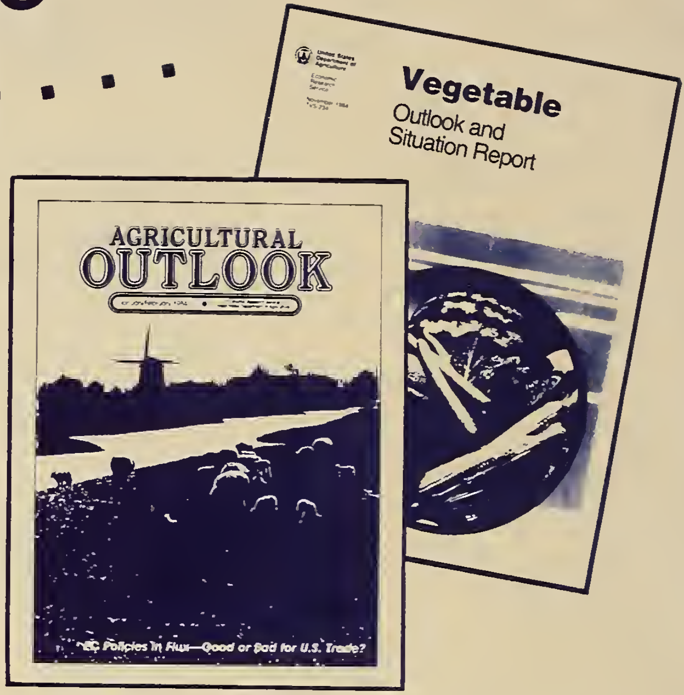

Vegetable
Outlook and Situation Report
AGRICULTURAL OUTLOOK
EC Policies in Flux—Good or Bad for U.S. Trade?

The *Vegetable Outlook and Situation* has shifted to a new schedule. Instead of quarterly, the report will appear twice a year and be supplemented with a yearbook.

The semiannual reports will be issued each February and August and will focus more than previous releases on long-range forces shaping the vegetable industry. The yearbook will present both historical and recent data sources on all aspects of vegetable production and use.

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Florida's vegetable crops suffered extensive damage during a late January freeze. Preliminary data suggest this year's freeze was more severe and extensive than the one in late December 1983. But with fresh-market broccoli, carrots, cauliflower, celery, and lettuce harvested acreage forecast to increase 9 percent, prices for all winter vegetables will average below last year's high level. The harvest estimate for the 1985 winter quarter includes 127,800 acres in Arizona, California, and Texas.

The f.o.b. price outlook during February and March 1985 points to continued increase. Since November 1984, the average f.o.b. price index for all commercial vegetables increased 8 percent monthly; for the fresh market, 11 percent. Higher prices for fresh vegetables this February and March will likely boost the index for all commercial vegetables; however, some downward pressure on prices may come from continued high levels of fresh vegetable supplies from Mexico.

During the first half of 1985, average wholesale prices for processed vegetables will likely stay lower than last year, because of increased supplies of processed tomatoes, green and wax beans, sweet corn, and green peas. Higher yearend stocks of canned corn and green and wax beans will limit price increases.

Estimates of California's 1984/85 processed tomato pack indicate supplies are up 10 percent for canned tomatoes and 19 percent for paste, compared with 1983/84. Inventories of canned green peas suggest a reversal of the sharp downturn in prices since mid-1984, but not a return to the previous steep climb.

A larger potato crop and increased stocks portend lower potato prices for 1985. Florida's spring crop was not fully planted when the freeze hit on January 21-22, 1985, but some seed damage was reported around Hastings.

Following the 1984 harvest of dry edible beans, prices dropped below $20 a cwt. Without a surge in export demand, prices are expected to remain between $18 and $20.

Preliminary estimates for total commercial production put the 1984 principal vegetable crop at its largest harvest in recent years. In major States growing nine fresh-market vegetables and four processing vegetables, estimated output totaled 440 million cwt, up 8 percent from 1983 and 2 percent from 1982.

Total **fresh vegetable shipments**, including imports of 18 vegetables and melons, increased 3 percent in 1984, compared with 1983. The increase to 235 million cwt, excluding 132 million cwt of potatoes and sweetpotatoes, maintains the average 2.6-percent annual growth rate in fresh vegetable shipments.

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Approved by the World Agricultural Outlook Board. Summary released February 13, 1985. The next summary of the *Vegetable Outlook and Situation* is scheduled for May 14, 1985. Summaries of Outlook and Situation reports may be accessed electronically. For details, call (402) 472-1892 or (301) 588-1572. Full reports, including tables, are provided by the system on (402) 472-1892.

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OUTLOOK

Fresh Vegetables

Arizona, California, and Texas Increase Acreage 9 Percent

Before the late January 1985 freeze in Florida, the State's estimated acreage for harvest of the principal fresh-market vegetables was up 8 percent for winter-quarter 1985 compared with a year ago. However, an estimate of Florida's post-freeze acreage is not available.

The total acreage for harvest in Arizona, California, and Texas during January to March 1985 is estimated at 127,800, up 9 percent from 116,800 acres in first-quarter 1984. Lettuce acreage, 50 percent of the three-State total, is up 10 percent to 63,900, largely because a 26-percent increase in Arizona offsets a 2-percent decline in California.

The winter-quarter 1985 acreage for harvest of dual-purpose crops--broccoli, carrots, and cauliflower--is 58,300 acres, up 7 percent from a year earlier. California, with 86 percent of the total dual-purpose vegetable acreage, is expected to increase broccoli 7 percent, carrots 6 percent, and cauliflower 1 percent.

Table 1.--Fresh vegetables: Winter quarter harvested acreage of principal crops, 1984-85

Item	Area for harvest in major States		
	1984	1985	1985 as percent of 1984
	1,000 acres		Percent
Broccoli 1/	22.4	24.0	107
Carrots 1/	23.7	25.8	109
Cauliflower 1/	8.4	8.5	101
Celery 1/	7.8	9.3	119
Sweet corn	8.9	9.8	110
Lettuce	64.0	70.9	111
Tomatoes	16.3	16.9	104
Total 2/	151.5	165.2	109

1/ Includes fresh market and processing. 2/ May not add to total because of rounding.

SOURCE: Vegetables, SRS, USDA.

Florida is a principal supplier of fresh-market celery, sweet corn, lettuce, and tomatoes. Prior to the late January cold snap, Florida's acreage for harvest of these four crops was estimated at 37,400 acres, compared with 34,700 from 1984's winter quarter. Last year's harvest was also reduced by a freeze, but initial reports indicate that this year's freeze was more severe and extensive.

The freeze should reduce vegetable production in Florida during February and March. In northern and central Florida, temperatures were as low as 8 degrees Farenheit in Hastings to the mid-20's in Hillsborough and Manatee. Crops of cabbage, potatoes, escarole, lettuce, radishes, cauliflower, and tomatoes were severely damaged. Salvage harvesting, mainly of carrots, radishes, and leaf items, continued for 2 to 3 weeks, but the damage reduced quality and shelf life.

From the Everglades and Immokalee areas southeast to Dade County, the 20- to 30-degree temperatures caused salvage harvesting of sweet corn, tomatoes, peppers, and eggplant. Heavy losses of cucurbit crops (squash, cucumbers, and watermelons) will delay their production until April. Snap bean losses in Delray-Pompano are estimated at 90-95 percent.

If Florida's initial winter-quarter harvest expectations had been realized, the increased production would have held down prices and likely strengthened the State's competitive position against Mexico. Now Florida's share of the fresh-vegetable market is likely to remain steady for the third consecutive season. Also, Florida growers harvesting in late January and early February likely faced increased difficulties finding transportation, because of the shift to western U.S. sources.

Florida, the principal U.S. supplier of fresh vegetables during late fall to early spring, competes mostly with western Mexico for the U.S. market. In recent years, Florida's competition with Mexico has been for snap beans, cucumbers, eggplant, bell peppers, squash, and tomatoes. Mexico ships most of its six winter vegetables during January to March. When climate permits both regions to realize harvest expectations, large supplies hold down prices. More often, however, cold or rainy weather in one or both regions reduces output, causing prices to rise from January to March and fall from April to June.

Florida's share of the market during October to June has remained at 51 percent since 1980/81, after steadily climbing from 41 in 1976/77. Mexico's 1983/84 share climbed to 41 percent from 35 percent in 1981/82. Both regions are gaining their market shares at the expense of Texas and Caribbean nations.

Preliminary data indicate that Mexico may keep it's current 40-percent share of the winter fresh-vegetable market, despite the expected surge of imports during February and March. During late December 1984 to late January 1985, large Florida supplies and low average prices held imports below a year earlier. Shipments of fresh tomatoes, the most important item among the six winter fresh vegetables, totaled 11 percent more during mid-October 1984 to mid-January 1985, compared with a year earlier. Florida's 23-percent increase in fresh tomato shipments offset Mexico's 13-percent decline.

Prices Will Rise

Favorable weather and expanded acreage of most fresh vegetables increased supplies, forcing down prices during late 1984 and early January 1985. Florida's January freeze, however, will reduce its output and shift the major source of supply to Arizona, California, Texas, and Mexico. This year's freeze means that weather has affected winter-quarter production for 7 of the last 10 years. For these years, the January-to-June price path usually begins with price increases during the first quarter, followed by declines in the second.

This year's freeze was more severe and extensive than the one in late December 1983. Therefore, f.o.b. prices for fresh vegetables will likely increase more now than they did after the previous freeze. Then, the average f.o.b. price for fresh vegetables increased 17 percent the following month and continued to increase steadily til March, boosting first-quarter 1984 average f.o.b. prices 43 percent from first-quarter 1983. Although imports from Mexico bolstered overall supplies during first-quarter 1984, retail prices for fresh vegetables (excluding potatoes) rose 32 percent from a year earlier.

On average, Florida growers supply about 50 percent of the market for winter fresh vegetables during the January-to-March quarter. Therefore, assuming no change in demand for fresh vegetables, average f.o.b. prices will likely rise 45 to 55 percent during February to March, until domestic production recovers. Average retail prices are likely to increase 25 to 35 percent. Imports of fresh vegetables from Mexico will help to meet demand, and Florida growers will replant some acreage to vegetable crops with shorter production schedules.

Florida's freeze is expected to reduce production from late January to May 1985. So the February-to-April 1985 average index of f.o.b. prices for fresh vegetables will likely reach 140 (1977=100), but could rise more if imports from Mexico do not increase from winter-quarter 1984. This compares with 102 for November to December 1984 and 158 for February to April 1984.

Processed Vegetables

The average wholesale price index for processed vegetables will likely stay lower during first-half 1985 than a year earlier because of increased supplies of processed tomatoes, green beans, sweet corn, and green peas. Although national estimates of processed tomato production are not final, the season's supply of California tomatoes is up 10 percent; paste, 19; and chili sauce, 10.

Because of lower tomato puree production in 1984, California's 1984/85 supplies are down 9 percent. Wholesale prices of canned tomatoes and tomato concentrates were lower during late 1984 than a year earlier, partially explaining the decline in imports during second-half 1984. With estimates of world tomato production up 13-15 percent in 1984, the domestic market outlook is for continued downward pressure on prices.

The downward trend in canned green and wax bean prices since July 1984 is expected to level during first-half 1985. The production of canned green and wax beans during second-half 1984 was about 10 percent greater than a year earlier because of low carryin stocks. Total supplies during second-half 1984 were about 2 percent more than a year earlier, but sales were off 6 percent, leaving yearend stocks above 1983's. After a 2-percent-a-month climb in wholesale prices from June 1983 to June 1984, prices fell 1 percent monthly through second-half 1984. Though current stocks of canned green beans are above a year earlier, they remain below the recent 10-year average.

The current larger supplies of canned sweet corn portend lower average prices during first-half 1985 than a year earlier. Estimates show the 1984 pack of canned sweet corn up about 10 percent from 1983, driving down prices 4 percent a month during July-December 1984. The December 1984 average index of wholesale prices for canned sweet corn was 184 (1967=100), 15 percent below a year earlier. A slight rebound in canned corn prices is expected for first-quarter 1985, but large inventories will keep the increase minimal.

The second-half 1984 slide in prices for canned green peas will reverse in 1985 because of tight remaining stocks. The 2.2-percent rate of monthly increase in wholesale prices from May 1983 to May 1984 reversed to a 1.2-percent decline through November 1984. The 12-percent larger 1984 pack replenished low carryin stocks. Although current inventories are above a year earlier, they are below average, giving rise to the December 1984 advance in wholesale prices.

Potatoes

Recent Developments

U.S. fall potato planting in 1984 was 5 percent higher than in 1983. However, total production in 1984 was up 8 percent from 1983. Fall production in the seven eastern States increased minimally, while production in the central States increased 13.8 percent, with Michigan increasing it's production 27 percent, from 1983. The western States fall production increased moderately, with summer 1984 production increasing 23 percent over 1983. Total spring production was 23,798 cwt, an increase of 30 percent, with California increasing it's production 33 percent.

Stocks, Disappearence Up

Fall potato stocks in the 15 major States totaled 174 million cwt on January 1, 1985. This represents an increase of 5 percent from 1984, but only a 3-percent decrease from 1983. The quantity of potatoes in storage this year is 1 percent less than 1984. Maine, New York, and Pennsylvania stored 21.9 million cwt, which was slightly below last year and 21 percent below 1983. Maine stocks were down 6 percent, New York maintained it's 1984 level, and Pennsylvania increased it's storage 41 percent.

Stocks in the central States totaled 41 million cwt as of January 1, 1985. This represents a 14-percent increase from 1984, with Minnesota showing the largest increase at 35 percent, followed by Michigan with 20 percent.

The western States increased their storage 2 percent from 1984, but 4 percent less than 1983. Idaho and Washington maintained the same storage as the previous year. Colorado's stocks were up 22 percent, while California's storage dropped 9 percent from 1984.

The disappearance of potatoes in the major producing States through January 1, 1985, totaled 130 million cwt, an increase of 9 percent from the 2 previous years. This disappearance includes shrinkage and loss of 18.9 million cwt, an increase of 3 million cwt from the 1983 harvest to January 1984.

In December, cold-storage holdings increased 21 percent over a year earlier, and 3 percent over 1982. Stock of frozen french fries in cold storage rose from 634 million cwt to 713 million cwt, a 12-percent gain. Holdings of other frozen potatoes increased 25 percent in 1984.

Frozen stocks increased through 1984. In June, total frozen stocks reached an annual high of 835 million cwt. Holdings declined in September, then increased from October through December. During December 1984, frozen stocks in the Pacific Northwest, Mountains, and Central Northwest increased 15, 24, and 19 percent, respectively. New England cold-storage stocks declined slightly.

Retail Prices Up, Grower Prices Down

Retail prices for fresh potatoes averaged 17 percent higher for 1984 than 1983, and only slightly lower than for 1981. In 1983, the annual average price was $0.206 and rose to $0.242 in 1984. Retail prices rose steadily during the first three quarters of 1984, peaking prior to the fall harvest. The prices declined rapidly in the fourth quarter, possibly in response to increased production and stocks in 1984.

Grower prices for potatoes in December 1984 were 11 percent lower than a year earlier, and the decline may be attributed to slightly higher 1984 stocks and production. The 1984 season-average price was 2.5 percent below 1983.

Imports Up for 1985

U.S. growers have been concerned about potato imports from Canada, because of their price-depressing effects. The fall harvest imports from Canada have increased 70 percent over 1983, and the Agricultural Marketing Service (AMS) reports that potatoes crossing the border through Maine in January 1985 have increased 33 percent from January 1984. Two contributing factors to the increased imports from Canada are their large crops and probelms in alternative markets. An additional factor is the strength of the U.S. dollar.

Winter Production

Florida's spring potato crop escaped serious damage from the recent freeze because seed was in the ground and protected. Winter acreage in Florida increased 4 percent, while acreage in California declined 4 percent. The available harvest area is 13,100 acres, a slight gain from a year earlier. Because of higher yields, the 1985 production of winter potatoes is currently forecast at 2.9 million cwt, 8 percent above 1984.

1985 Potato Prices To Decline

A larger crop and increased storage stocks suggest lower potato prices for 1985. Farm price during the second half of the 1984/85 marketing season is expected to range from 10 to 20 percent below a year earlier.

Sweetpotatoes

The 1984 sweetpotato crop, at 13 million cwt, increased 7.5 percent from 1983's 12.1 million cwt. North Carolina, the largest producer, increased production 11.3 percent, while output in California, the third largest producer, declined 6 percent. In 1984, acreage increased slightly over 1983, but is still at one of its lowest levels in the last 10 years. Grower prices increased slightly in January 1985 to $16.80 a cwt, 1.8 percent higher than a year earlier.

The Dominican Republic is the major foreign supplier of sweetpotatoes to the United States. During 1983/84, the Dominican Rebuplic increased it's exports to the United States 16 percent over 1982/83, while quantities imported during fourth-quarter 1984 did not vary from a year earlier.

Pulses

Dry Edible Beans

Dry edible bean production in 1984 rebounded partially from 1983's sharp decline. The preliminary estimate places production at 19.9 million cwt, an increase of 22 percent over 1983, but substantially below 1982's 25 million cwt crop. Production increased across the board, with all major producing States, except Michigan, and classes of beans, except garbanzos (chick peas) and pinks, gaining. The increases in bean prices during the last half of the 1983/84 marketing season encouraged producers to expand bean acreage. Acreage increases, coupled with more favorable weather, resulted in this year's increased production.

The once-booming export for dry edible beans has languished in recent years. Exports declined 181 percent between the 1981/82 and 1982/83 market years. However, they picked up during the first quarter (September to December) of 1984/85, increasing almost 30 percent over a year earlier, largely due to a sale of 29.000 tons of pintos to Brazil.

Dry bean prices got off to a strong start in 1984, with prices averaging near $24 during the first quarter. Following this year's harvest, prices declined to around $20, and by Janauary 1985, declined further to $19 a cwt.

Prices for late 1983 and early 1984 could not be sustained with this year's increased production, and declined to $19.20 by November. Preliminary estimates indicate a further decline, to $18.60 during December 1984. Prices for the balance of the 1984/85 market year are expected to range between $18 and $20 per cwt.

Dry Peas and Lentils

Grower prices for dry peas declined for the second year in a row while lentil prices rebounded late in 1984. In 1984, grower prices for green peas averaged $8.76 per cwt, down from $9.14 in 1983 and $10.80 in 1982. Yellow pea prices also declined substantially from $8.11 in 1982 to $7.80 in 1984.

Lentil prices averaged $19.53 per cwt in 1984, up sharply from the $13.72 of 1983.

1984 UPDATE

Vegetables

Fresh Vegetable Prices Increase

Following the late December 1983 freeze in Florida and Texas, 1984 opened with increased grower prices during January and February followed by declines through June. In spite of unseasonal increases during August and October, the annual average price of vegetables fell below the 1960–83 average. Preliminary data indicate a below-average increase in the aggregate index of grower prices for 1984 compared with 1983. The 1960–84 average rate of increase in grower prices for vegetables is about 5 percent. But in 1984, the increase was only 3–4 percent, compared with the 6.6 percent in 1983.

Recalling 1981 and 1982, when cold weather curtailed Florida's winter supplies, the path of prices during first-half 1984 was typical. But during August, shortened supplies of tomatoes due to California's heat wave, and fewer supplies of lettuce during October served to raise average prices. In November and December, good weather in California and Florida caused increased supplies and led to lower average grower prices.

High Prices Early in 1984

The December 1983 freeze in Florida and Texas and lower acreage in California reduced domestic supplies of principal winter fresh vegetables. Total shipments of carrots, celery, and sweet corn were 20 and 12 percent lower in January and February, respectively, compared with 1983. The average grower price for these items consequently increased 85 and 90 percent over those periods.

Shipments of tomatoes during the first 2 weeks of 1984, were 1 percent below a year earlier, before increasing as Mexican suppliers responded to increased prices. The average grower price for tomatoes in January 1984 were more than double those from January 1983.

These principal fresh vegetables heavily influence the average aggregate index of grower prices. During January and February 1984, the average index of grower prices for fresh vegetables hit 162 (1977=100) and 167, respectively. Those two 1984 highs have been exceeded only twice: 179 in January 1982 and 168 in March 1981. Both followed cold snaps in southern States. Moreover, in early 1981, the cold and rain in Mexico exacerbated the shortage of U.S. supplies.

Prices Fall Through July

Supplies of most fresh vegetables were large enough during March to July to cause the index of grower prices to tumble from 167 (1977=100) in February to 118 and 120 in June and July, respectively. Lettuce prices, for example, averaged about $8 a cwt during the second quarter, 38 percent below second-quarter 1983, while total lettuce shipments were 7 percent higher.

During that period, low prices led Arizona lettuce growers to abandon fields, resulting in a total loss of 1 million cwt. Preliminary data indicate that Arizona's lettuce output in other than the western region was only half its potential production. Crop abandonment and low prices between January and June 1984 plunged total lettuce value nearly 70 percent below that for the same period a year earlier.

Higher grower prices for both tomatoes (during August) and lettuce (during October) caused two unseasonable highs in the aggregate index of grower prices. As supplies of tomatoes dropped 19 percent during July to October 1984 compared with the same period in 1983, average prices jumped 34 percent. The principal commercial region during this period was central California, with the State's output in regions other than the desert estimated down 26 percent.

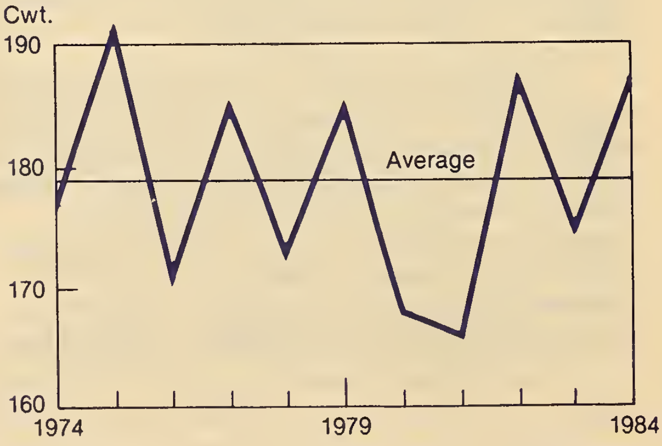
Vegetable Output Tops Average

Preliminary estimates for 1984 total commercial production of the principal vegetable crops indicate the largest harvest in recent years. Estimated output in major States of nine fresh-market vegetables (broccoli, carrots, cauliflower, celery, sweet corn, honeydew melons, lettuce, onions, and tomatoes) and four processing vegetables (snap beans, sweet corn, green peas,and tomatoes) totaled 439.6 million cwt, 8 percent higher than in 1983 and 2.4 percent higher than in 1982. The 1974-84 average total output is up 1 percent, to 398.5 million cwt, from the 1974-83 average.

The annual output growth rate during 1974-84 is 1.6 percent, pulled up by the large outturn in 1984. The output growth rate is hovering at about the population growth rate. Thus the 1974-84 average growth in per capita production is only 0.5 percent.

Generally favorable weather in 1984 contributed to high vegetagble yields, increasing 3.7 percent, compared with 1983. This raises the 1974-84 average growth in yield to 2.1 percent. The 1982-84 per acre average yield of 195 cwt is 20 percent higher than for 1974-76. Also in 1984, total acreage harvested, estimated at 2.23 million acres, was up about 4 percent from 1983 and 3 percent from 1982. Acreage increases for all items except lettuce and honeydew melons caused the fourth major annual increase in harvested acreage since 1974.

Commercial Vegetables: Per Capita Production, 1974-84



California Output Increases, Florida and Texas Hurt By Freeze

Commercial fresh vegetable production, including dual-purpose crops of broccoli, carrots, and cauliflower, totaled 211.5 million cwt for 1984, with 37 percent produced during the first 6 months and 63 percent during the second. California, the leader with 52 percent of the production from major States, increased 1984 output 6 percent from 1983. Increased output during January to July fully accounts for California's annual gain, and that margin lies chiefly in broccoli, cauliflower, lettuce, and onions. Second-half 1984 production in California fell slightly compared with a year earlier, mostly because fresh tomato yields averaged 210 cwt an acre, a 75-percent drop from 1983. The reduced output led to higher tomato prices in August, when the average grower price of $34.10 a cwt nearly doubled the $17.70 for August1983. During second-half 1984, lower California lettuce production also helped to raise prices. For example, during August to October, the 3-month average price, $16.50 a cwt, was 22 percent higher than a year earlier.

The 1984 fresh-market production in Florida, ranking second at 11.4 percent of the total, dropped 3 percent to 24.2 million cwt. Florida growers, with over 80 percent of January-June fresh tomato production, recorded the third consecutive year of lower yields. The low yield, 270 cwt an acre, in first-half 1984 offset a slight increase in harvested acreage, yielding a 9.4-million-cwt crop, 2.5 percent less than 1983's. Florida's freeze-reduced supplies of tomatoes immediately affected the market, driving up the January 1984 average grower price to $40.20 a cwt, from $19.40 a month earlier and from $18.60 in January 1983. In February 1984, the monthly average price jumped to

$44.00 a cwt, despite the increased supplies from Mexico.

In the other leading States, fresh-market production is up for 1984. But in Texas, the December 1983 freeze damaged onions and carrots. Texas onion growers planted 20,600 acres for spring harvest in 1984, up 1,400 from 1983, but they harvested only 18,600 acres. The average yield of Texas spring onions, at 180 cwt an acre, however, is 10 percent below 1983's 200, and accounts for most of the drop in output from 3.8 million cwt in 1983 to 3.3 million in 1984.

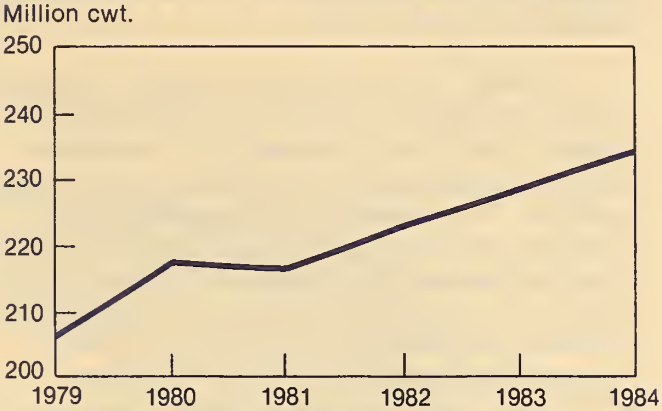
On the other hand, during second-half 1984, Texas growers planted 31 percent fewer acres of carrots than in 1983, continuing a recent trend, but the dry summer lowered average yield to 135 cwt an acre, 39 percent below 1983's and 18 percent below 1982's. Thus, the 1984 July-December carrot crop was 40 percent of 1983's. The December 1983 freeze also lowered first-half 1984's output about 20 percent, resulting in a 34-percent drop in total output from 3.2 million cwt in 1983 to 2.1 million in 1984.

In summary, the 4.7-percent annual increase in 1984 fresh vegetable production (including dual-purpose items) comprises a 4.4- and a 4.9-percent increase in output during the first half and the second half of 1984, respectively. The most notable gains were made in broccoli, 25 percent; cauliflower, 18 percent; celery, 12.5 percent; sweet corn, 9.8 percent; and onions, 8.4 percent. Lettuce production finished 1984 up only 1.8 percent, and tomato output declined 3.5 percent from 1983. The December 1983 freeze shortened supplies during early 1984, as did the August heat in California.

Fresh Shipments Increase 3 Percent

Total fresh vegetable shipments for 18 vegetables and melons (excluding potatoes and sweetpotatoes) are estimated up 3 percent in 1984 compared with 1983. This increase, after a 1.4-percent increase in 1983, for the principal fresh vegetables tops the 1979-83 average growth rate of 2.6 percent. Above average increases in supplies of three melons, snap beans, broccoli, cauliflower, bell peppers, squash, and cherry tomatoes offset below-average increases in celery, lettuce, and onions, and declines in cabbage, carrots, sweet corn, cucumbers, eggplant, and tomatoes.

Fresh Vegetables: Total Shipments, 1979-1984[1]



[1] Includes snap beans, broccoli, cabbage, cantaloups, carrots, cauliflower, celery, sweetcorn, cucumbers, eggplant, honeydews, lettuce, onions, bell peppers, squash, tomatoes, cherry tomatoes, watermelons.

Preliminary data indicate that large shipments in March, May, August, November, and December pushed up the yearly total to 244 million cwt. Shipments of fresh melons (cantaloupe, watermelons, and honeydews), which average about 17 percent of the total, are up 10 percent to 43 million cwt in 1984. Fresh shipments of broccoli, carrots, and cauliflower, together averaging 9 percent of the total, are also up 2 percent from 1983, and eggplant, bell peppers, and squash (4 percent of the total) are up 8 percent. Lettuce shipments in 1984 are up 2 percent to 60 million cwt, and tomato shipments, because of lower movement during July to October, are about equal to 1983's 26.5 million cwt. Dry onion movement, because of larger shipments in March, May, August, and November, is up 3 percent to 28 million cwt in 1984. Celery supplies, because of larger shipments during the spring and fall months, are estimated up 4 percent to 16 million cwt compared with 1983's below-average total.

Processing Vegetable Output Up 11 Percent

The 1984 total production of four principal processing vegetables--snap beans, sweet corn, green peas, and tomatoes--is estimated at 11.41 million tons, up 11.2 percent from 1983. Also the 1984 crop of processing broccoli, carrots, and cauliflower is estimated at 649,830 tons, for a combined seven-item total of 12.1 million tons. Compared with 1983, production declines in processing carrots (6 percent) and cauliflower

(1 percent) are related to low yields in Texas during the first half of 1984 and in California during the second half.

In 1984, California's processing tomato output, 86 percent of the total, increased 10 percent from 1983, because of a 7.4-percent jump in yields and a 2.7-percent expansion in acreage. The warm summer speeded crop development, forcing harvest dates together in areas accustomed to staggered picking. High yields and a 1-percent increase in contracted acreage contributed to the total 6.6 million tons and suppressed open-market buying, which was down 42 percent from 1983.

The California average price of processing tomatoes is estimated down 1.4 percent to $64.80 a ton. That compares with a 2.4-percent decline in Indiana, Michigan, New Jersey, Ohio, and Pennsylvania, where the average price dropped to $82.36. The 1984 value of the U.S. crop of processing tomatoes is estimated at $ 517 million, 8 percent above 1983's, but 1 percent below 1982's.

The U.S. crop of sweet corn is estimated at 2.6 million tons, up 16 percent from 1983, but 6 percent less than in 1982. Minnesota and Wisconsin produced a combined 1.3 million tons. Oregon's 10-percent increase in processing sweet corn was more than countered by Washington's 22-percent decline, netting a Northwest regional decline of 6 percent from 1983 and 29 percent from 1982. The 1984 U.S. average price of sweet corn is estimated at $63.50, 6 percent above 1983's, indicating the strength of demand for sweet corn in a year of below-average carryin stocks.

The 1984 estimate of processing snap bean production, at 666,730 tons, is 14 percent more than 1983 and 4 percent more than 1982. Wisconsin, with about 36 percent of the total output, continued to expand snap bean production, while New York and Oregon lost market share in 1984. The proportion of total production going to canning and freezing remained unchanged during 1982 to 1984, at 70 and 30 percent, respectively.

Processing green pea production, 495,880 tons, was up 16 percent in 1984, compared with 1983, but about even with 1982. Combined, Wisconsin and Washington, with about 48 percent of total output, increased production 14 percent from 1983. Minnesota increased production 28 percent in 1984, increasing market share from 19 percent in 1983 to 21 percent. The proportion of green pea output routed to the freezer gained over that routed to the canner, reaching nearly equal parts in 1984 after a 46- to 54-percent split in 1982.

Farm Value Increases 5 Percent

The total farm value of the principal fresh and processing vegetables continued its climb in 1984, increasing 5 percent from 1983 to $3.9 billion. Although the average value of these crops dropped 3 percent in 1984, the 8-percent lift in total output netted the $192-million increase. Only once since 1974 has total farm value dropped: in 1976 the total value of $2.3 billion was 6 percent less than in 1975, the result of a 9-percent decline in output with only a 4-percent improvement in average value. From 1974 to 1984, the average rate of growth in total and average farm value is 6.3 and 4.7 percent, respectively. The difference is made by 1.6-percent growth in total output.

The 1984 total value of the nine principal fresh-market vegetables is estimated at $2.9 billion dollars, the processing portion of three dual-purpose vegetables (broccoli, carrots, and cauliflower) at $126 million, and the four processing vegetables at $911 million. Thus, of the $3.9 billion dollars total value, fresh-market receipts claimed 74-percent .

MARKET CHARACTERISTICS OF BELL PEPPERS

John Love
and
Neilson Conklin 1/

Abstract: Regression analysis is employed to estimate properties of the demand for fresh-market bell peppers. Using USDA Agricultural Marketing Service (AMS) shipments, arrivals, and prices data, wholesale price flexibilities are estimated for the January-to-June and July-to-December periods. Prices in the New York wholesale markets are more flexible during January to June than July to December because of the regional distribution of supplies.

Keywords: Fresh vegetables, bell peppers, supply, demand, prices, wholesale, seasonality.

Introduction

The U.S. market for bell peppers demonstrates a feature common to many fresh-market vegetables: seasonal changes in consumer demand and in supply. Because of their susceptibility to frost damage and the perishability of harvested fruit, bell pepper production shifts southward during the fall and northward during the spring.

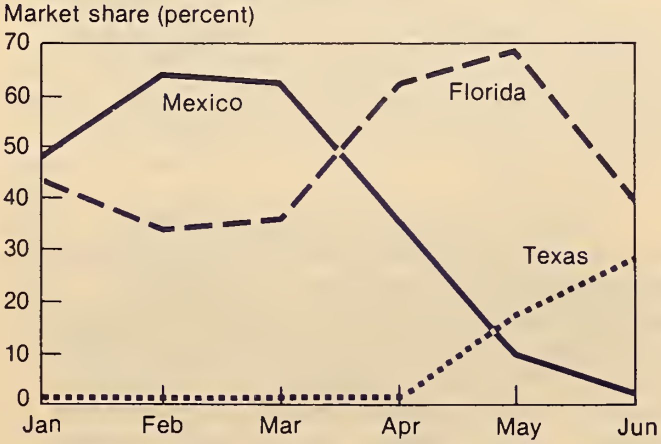
Southern States, Florida, Texas, Mexico, and Caribbean nations supply U.S. consumers with bell peppers from late fall to early spring. During the summer, California is the principal source. However, more diverse sources play a role in summertime pepper markets. For example, New Jersey supplies about 20 percent of New York's bell peppers during July to December.

These seasonal supply shifts offer market opportunities that are reflected by changes in the price of bell peppers. The purpose of this article is to present an analysis of the bell pepper market, focusing on seasonality in supply, demand, and prices. Although this analysis is specific to bell pepper markets, this type of analysis applied to other fresh market vegetables, can help to identify opportunities for new suppliers to enter the market.

Seasonality of Supply

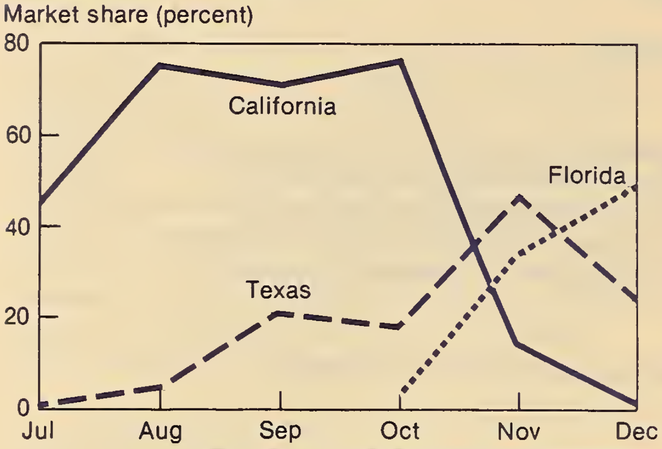
According to the 1982 Census of Agriculture, the total number of U.S. farms producing bell peppers, or sweet peppers, declined 5 percent from 1978 to 1982, but harvested acreage increased 13 percent to 70,999. Vegetable growers in the South and Southeast are largely responsible for the overall gains. California, Florida, and Texas, with 57 percent of the 1982 land in peppers, increased acreage 18 percent during the 5-year period. Georgia, Kentucky, Michigan,

Peppers, Bell: Average Market Share of Shipments During January-June 1979-1983

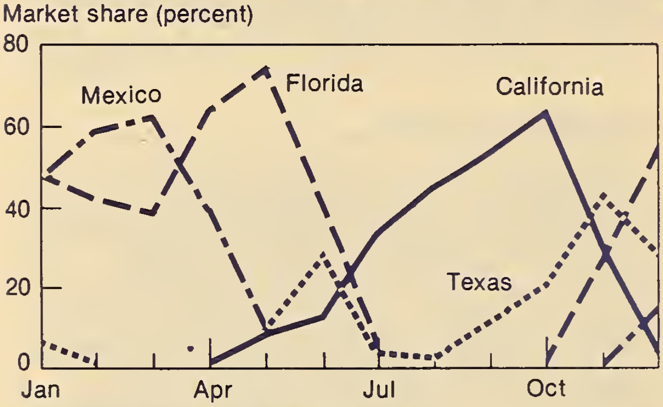


1/ John Love and Neilson Conklin are agricultural economists, National Economics Division, Economic Research Service, USDA, Washington, D.C.

Peppers, Bell Average Market Share of Shipments During July-December, 1979-83



Peppers, Bell: Average Market Share of Arrivals in 23 Major Cities, January-December 1979-1983



Source: USDA Agricultural Marketing Service.

North Carolina, New Mexico, and New York also are growth States, increasing acreage 35 percent from 1978 to 1982.

Vegetable growers in Florida, Texas, and Mexico supply the bulk of bell peppers to U.S. markets during winter and spring (January to June). Mexico reaches its peak first in February, followed by Florida in May, and Texas in June.

Because supplies are concentrated regionally, heavy rains or low temperatures in major producing areas may cause short supplies and high prices. A supply shortage in one region, caused by weather like the major freeze in Florida last month, forces produce buyers to seek supplies from chiefly western regions. All the effects of this year's freeze are not yet known, but the Christmas freeze of 1983 provides a recent example of a weather-induced supply shift.

Following the 1983 freeze, Florida's share of weekly pepper shipments dropped from about 50 percent in December to about 10 percent by late February 1984, compared with an average of 60 percent during January to February 1983. Consequently, due to the upward pressure on prices, imports of bell peppers from Mexico tripled during January and February 1984, compared with 1983.

During the summer and fall months (July to December), California, Texas, and Florida ship the largest share of bell peppers, but the New England, Great Lakes, and mid-Atlantic regions also ship significant quantities mostly to eastern markets. Climate, the critical factor affecting supplies during winter and spring months, is not as important during summer and fall because production regions are widespread.

Regional proximity and transportation costs are key factors determining what suppliers are most prevalent in particular markets. For example, in western wholesale markets, California and Mexico hold the lion's share of bell pepper sales. In eastern markets, Florida competes with Mexico during the winter and spring, but with other eastern States such as New Jersey and North Carolina during the fall. Of total bell pepper arrivals in New York area markets, 56 percent originate in Florida; 10 percent, California; 8 percent,

Table A--Bell peppers: Proportions of arrivals in New York area terminal markets from major supply areas, 1983-1984.

State	January-December	January-June	July-December
	Percent		
California	10	--	22
Florida	56	80	22
Mexico	8	13	--
North Carolina	8	--	17
New Jersey	9	--	21
Texas	5	4	7
Other	4	3	11

-- = less than 1 percent.

Source: USDA Agricultural Marketing Service

Mexico; 5 percent, Texas; and 21 percent, other regions--primarily Mid-Atlantic States.

Wholesale Demand

While the seasonal nature of bell pepper supplies is easily seen in shipments data, the properties of consumer demand for bell peppers are less obvious. Since peppers are perishable and wholesale supplies are fixed during short time periods (e.g. a week), the quantity demanded--the quantity consumers are willing and able to purchase at a given price--determines short-run pepper prices in wholesale markets. Pepper prices must settle to a level that will clear the market.

Because the product is perishable and supplies are fixed, Agricultural Marketing Service (AMS) data on pepper prices and arrivals for major U.S. markets (see appendix A) can be used to estimate a demand curve or relationship. The data used in this analysis are for bell pepper arrivals in the New York metropolitan area from January 1983 to November 1984. During this period, the average weekly arrivals were about 1 million cwt, and the average price was $11.81 a carton.

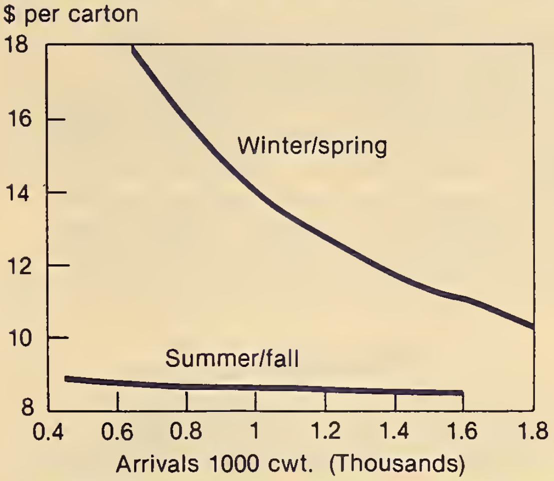
Statistical estimates of the demand relationship (see appendix B) resulted in the expected downward sloping demand curve during the winter and spring months. During this period, a 10-percent increase in arrivals yielded a 5-percent decrease in pepper prices.

The analysis also indicates that pepper demand in the New York wholesale market shifts during the summer and fall months. Given the same level of arrivals, weekly average pepper prices are 50 percent lower in summer and fall than during the winter and spring. Furthermore, summertime pepper prices, at least during 1983-84, showed no detectable response to changes in arrivals. Increases have almost no effect on prices during July to December.

Table B. Weekly Wholesale Price Flexibilities, New York Bell Peppers, 1983-84

Season	Price Flexibility
January to June	-.51
July to December	-.03

Wholesale Bell Pepper Demand: New York 1983-84



This seasonal shift in wholesale pepper demand is probably due to alternative sources of bell peppers in the New York area during the summer and fall. These bell peppers--from farmers markets, direct farm purchases, and garden produce--do not flow through the major wholesale markets. Because of this competition, prices at wholesale markets fall and become less responsive to arrivals.

Identifying Market Opportunities

Seasonal shifts in bell pepper supplies and the concentration of production in southern areas cause a high degree of price variability in New York wholesale markets between January and June. During this period, market opportunities for new suppliers, for example, Caribbean nations, exist as the principle source of supply shifts northward. This period is not fixed but varies with growing conditions in Florida and Texas.

Wholesale prices from January to June in New York are more responsive to arrivals than during summer and fall months. Thus, changes in New York pepper arrivals have a greater effect on prices than during the summer and fall. The greater diversification of supplies from July to December forces wholesale pepper prices in New York to a lower and more stable level. Market opportunities for new suppliers during these months are limited to gaps in regional harvests.

Fresh Vegetables Market Analysis

Markets for fresh vegetables at farm, wholesale, and retail levels have unique characteristics because of the perishability of the produce, and the seasonal shifts in supply and demand. AMS data (see appendixes) on vegetable shipments, arrivals, and prices are useful in identifying the supply, demand, and price structure of fresh vegetable markets.

References

This analysis of the bell pepper market demonstrates how simple economic theory and statistical analysis can be used with AMS data to provide a better understanding of vegetable markets. The following references provide useful guides to designing this type of market study.

Bender, F.E. , L.W. Douglass, and A. Kramer. *Statistical Methods for Food and Agriculture*. Westport, Conn.: AVI Publishing Co., 1981.

Tomek, W.G. and K.L. Robinson. *Agricultural Product Prices*. 2nd Ed. Ithaca, New York: Cornell University Press, 1981.

Appendix A

Fresh Vegetable Market Data

The AMS shipments and arrivals series (see references) provide sample data for estimating seasonal shifts in supplies of fresh-market vegetables. AMS field staff routinely contact vegetable shippers and brokers for current movement data. The shipment data represent trends in movement, thus shifts in supplies of fresh vegetables can be estimated from changes in each region's monthly share of average shipments.

At major wholesale markets in U.S. metropolitan areas, AMS staff record fresh vegetable arrivals and representative trading prices. For example, the data used in this analysis correspond to bell pepper wholesale prices and arrivals in the New York area markets from January 1983 to November 1984.

The AMS reports weekly and monthly market data in the following U.S. and Canadian metropolitan areas:

Atlanta
Baltimore
Washington, DC
Boston
Buffalo
Chicago
Cincinnati
Columbia, SC
Dallas
Denver
Detroit
Los Angeles
New Orleans
New York
Newark
Philadelphia
Pittsburgh
St. Louis
San Francisco
Oakland
Seattle
Tacoma
Montreal
Ottawa
Toronto
Vancouver
Winnipeg

The AMS reports movement and price data for the following fresh-market vegetables and melons:

artichokes
asparagus
beans, green
beets
broccoli
brussel sprouts
cabbage
cantaloups
carrots
cauliflower
celery
corn, sweet
cucumbers
eggplant
endive
escarole
honeydews
kale
lettuce
mushrooms
onions, dry
onions, green
peas, green
peppers
potatoes
radishes
rhubarb
spinach
squash
sweetpotatoes
tomatoes
watermelons

References

USDA, Agricultural Marketing Service. "Fresh Fruit and Vegetable Arrival Totals." Annual summaries.

USDA, Agricultural Marketing Service. "Fresh Fruit and Vegetable Shipment Totals." Annual summaries.

USDA, Agricultural Marketing Service. "Fresh Fruit and Vegetable Prices." Annual summaries.

Appendix B

Estimating a Demand Curve for Bell Peppers

Weekly pepper arrivals and price data reported by AMS reflect wholesale demand at major wholesale markets. Assuming supplies to be fixed within a 1-week period, pepper prices can be described mathematically as a function of pepper arrivals. Income and population affect demand in the long run, but seasonal shifts and the availability of substitute products are important short-run factors to consider in estimating bell pepper demand.

For market participants, the most important information about bell pepper demand is the effect of changes in the supply of peppers, and the effects of substitutes on wholesale prices. These effects are measured by price flexibilities--the percentage change in price for a 1-percent change in the quantity demanded. Flexibilities, estimated using AMS data for New York from January 1983 to November 1984 are summarized in the table below.

The statistical results of this analysis suggest that New York pepper prices do not respond to arrival changes during the summer and fall. During the winter and spring, however, prices are sensitive to changes in supply. The analysis also indicates that the arrivals of pepper substitutes (cucumbers, tomatoes, and cherry tomatoes) had no statistically detectable influence on New York pepper prices.

CHANGES IN THE U.S. POTATO INDUSTRY

Eugene Jones
and
Glenn Zepp [1]

Abstract: Growth in fast food expenditures and in the number of women in the work force have helped transform the U.S. potato processing industry. Both have increased demand for processed potato products and decreased demand for fresh potatoes. Increased demand for processed potatoes, along with adoption of improved processing technology, led to larger and fewer processing plants, increased contract procurement of potatoes, and a shift of potato production from the traditional fresh potato growing areas to the Pacific Northwest States of Washington, Oregon, and Idaho.

Keywords: Potatoes, processing, structure, performance.

The U.S. potato industry has a new look after three decades of change. Today there are fewer and larger potato farms and processing plants. The center of potato production has shifted from traditional growing areas in the northeastern States to the Pacific Northwest. Consumption patterns have changed too. Consumers today eat more processed potato products and fewer fresh potatoes than they did 30 years ago. A recently completed USDA economic study evaluated the contribution of changes in U.S. population, income, and working and eating habits to changes in the potato industry (Jones, 1984).

Overview of Potato Industry

Potatoes have the highest economic value of all vegetable crops, consistently accounting for over 45 percent of the value of major vegetables since 1950. Their farm value in

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[1] Eugene Jones is an assistant professor of agricultural economics at the Ohio State University, and Glenn Zepp is an agricultural economist with the Economic Research Service. USDA, Washington, D.C.

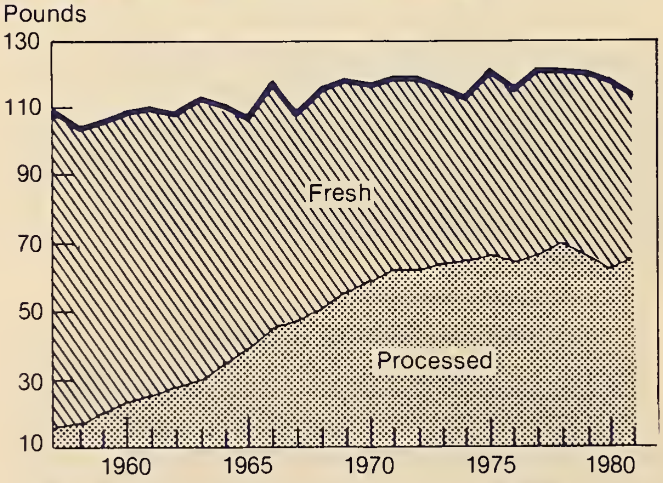
1950 was $482.1 million, (in 1967 dollars) and accounted for 47 percent of the value for major vegetables. Farm value had increased to $674.5 million and the proportion to 54 percent.

Over 1.5 million farms, with an average of 0.9 acres in potatoes per farm, were counted in 1950. Production amounted to 259.1 million cwt, with 167.4 million cwt, 64 percent, going for fresh consumption. Per capita consumption for fresh amounted to 100 pounds and for processed to 6.3 pounds. By 1981, total production has increased to 339 million cwt and the average potato acreage increased to about 50 acres per farm. Per capita processed consumption had climbed to 65.4 pounds while fresh consumption had fallen to 48.2 pounds (figure 1). Despite the decline in per capita fresh consumption, total consumption increased during this period, peaking at 120.5 pounds in 1975.

In 1950, potato production was heavily concentrated in the northeastern States. The New England States, Pennsylvania, and New York supplied 29 percent of production. Pacific Northwest States of Idaho, Oregon, and Washington, the second largest producing region in the 1950's, accounted for only 17 percent of potato production. By 1981, the Pacific Northwest increased its production share to 47 percent and the northeast's share fell to 13 percent. At the time this regional shift was occurring, total production increased 30 percent, from 259.1 million cwt in 1950 to 338.6 million cwt in 1981. This increase in total production occurred despite a 98-percent decline in the number of U.S. farms producing potatoes. Those farms remaining in potatoes increased both total acreage, yield, and production.

Figure 1

Per Capita Consumption of Potatoes



Industry Changes: Causes and Consequences

These profound changes in the potato industry resulted from changes in U.S. society, "external" to the potato industry, which have affected the demand for potatoes. 1/ These effects can be traced through the market system to see how they changed the potato industry itself.

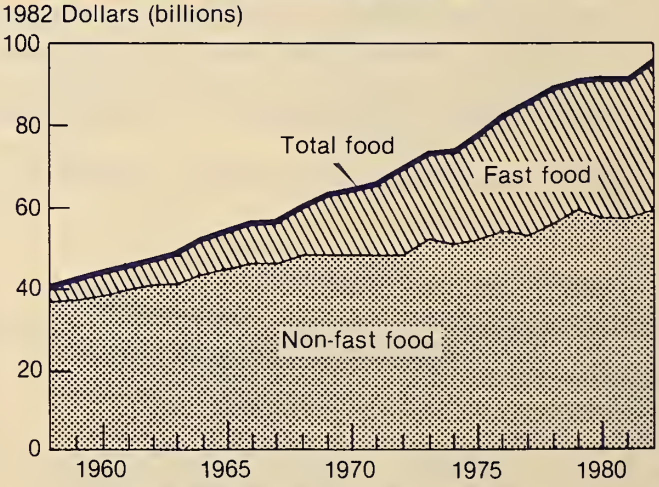
External Factors

Increasing consumption of food away from home during the 1960's and 1970's stimulated the demand for processed potatoes (figure 2). The rapid growth in eating at fast food restaurants (37 percent annually between 1958 and 1972) was especially important in accelerating the demand for frozen french fries.

Of 10 non-breakfast patrons of fast food restaurants, 7 order french fries as part of their meal (Cox, 1982). Because of this strong

Figure 2

Away From Home Food Expenditures



1/ The term "demand" as used herein refers to the schedule of prices and quantities that describe the relationship between consumers income, potato prices, and consumer purchases of various forms of potatoes.

preference for french fries, a 1-percent increase in fast food expenditures leads to a 0.06-percent increase in processed potato consumption. Sales of non-fast food restaurants have grown at a slower annual rate, only 2 percent, and these restaurants have had little effect on processed potato usage.

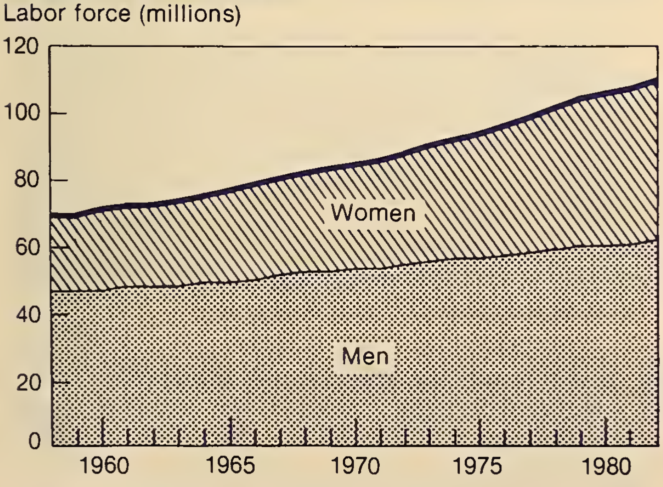
Increased fresh consumption, in the absence of a major advertising effort, seems dependent on market acceptance of fresh potatoes at institutional establishments. The growing consumption of baked potatoes at fast food establishments could potentially lead to an upward trend in fresh consumption.

While away-from-home food consumption increased, women were entering the U.S. labor force in unprecedented numbers (figure 3). This not only reinforced a growing demand for away-from-home food, but also enhanced consumption of processed potatoes at home. Working women, finding they had less time to prepare food, turned to partially prepared convenience foods including processed potato products. The result was an increase in the use of processed potato products and a decline in fresh potatoes. During the study period, each 1-percent increase of women in the U.S. labor force generated a 0.17-percent increase in the use of processed potatoes and a 0.24-percent decline in consumption of fresh potatoes.

Though income growth does not enhance the demand for fresh potatoes, it significantly enhances demand for processed potatoes. Each 1-percent increase in consumers average income generates a 0.27-percent increase in use of processed potatoes and a 0.24-percent reduction in fresh potatoes. This suggests that consumers readily switch from fresh to processed potatoes as their incomes rise. However, slowdowns in the rate of income growth do not seem to depress processed potato demand. Apparently many diners at upscale restaurants "trade down" to fast food establishments during slowdowns, or recessions on the economy.

Figure 3

Labor Force Participation



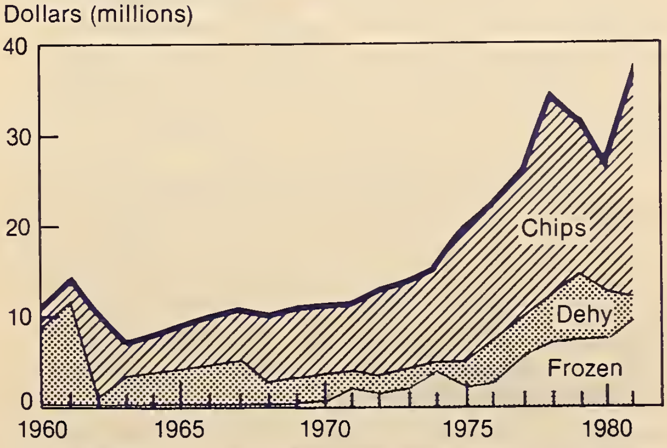
Internal Factors

At the same time that external factors in the U.S. economy were leading the potato industry in new directions, internal changes also were taking place. Technological advances in potato processing, for example, lead to increases in the size of potato processing plants, and a reduction in the number of plants, from 446 in 1959 to 221 in 1981. During this period, the average capacity of plants processing frozen potato products increased from 5,000 pounds to 45,000 pounds an hour (processed weight). Similar increases occurred in plants processing dehydrated potatoes and potato chips. As some firms adopted large-scale technologies with greater efficiency, smaller firms found themselves at a competitive disadvantage, compounded by increased advertising and market share gains for larger processors.

Figure 4 shows brand name advertising expenditures.for frozen potato products have been disproportionately concentrated on

Figure 4

Processed Potatoes, Brand Name Advertising Expenditures



potato chips. Dehydrated potato products were heavily advertised during the early 1960's but expenditures have since fallen. Advertising expenditure for frozen potatoes also have increased since the early 1970's. Differences in advertising expenditures for chips and frozen potatoes are primarily due to differences in marketing channels. Chips are marketed largely through retail establishments. Frozen potatoes, by comparison, are marketed predominately through institutional establishments (hotels, cafeterias, restaurants, etc.), which are less influenced by advertising than are retail consumers. Because consumers are quite responsive to advertising messages, expenditures for advertising on chips are quite large compared with frozen potatoes.

Large firms taking advantage of advertising and large cost-efficient plants drove smaller chipping firms from the industry. The four largest chip processors, for example, increased their market shares from 36 percent in 1959 to 60 percent in 1982, while the number of plants processing chips declined from 413 to 169. The abandoned plants were frequently owned by smaller firms.

Market share gains for the larger processors are enhanced also by increased capital and transportation costs. Each percentage-point increase in interest rates generated a 0.15-percentage-point increase in market share for larger processors. 2/ Increased capital costs, from high interest rates, may have had a disproportionate effect on smaller processors because shortages of internal capital often force them to borrow a higher proportion of needed funds.

Increased transportation costs had a more pronounced effect on smaller processors because costs had to be spread over fewer units. Each $1 increase in the price of diesel fuel led to a 0.07-percent increase in market shares for the top four potato processors.

Changes in processing capacity and utilization of that capacity are important indicators of changes in the potato industry. Despite a drastic reduction in the number of firms, potato processing capacity was expanded through increased plant size. For example, processing capacity for frozen potato products increased from 1.1 billion pounds in 1960 to a 1982 level of 6.1 billion pounds. Rapid growth during the 1960's, when capacity tripled, resulted in relatively low utilization rates, averaging 54 percent. By the 1970's, this rate had increased to 65 percent.

Supply, Demand, and Price

Potato farmers generally respond to price changes by modifying their production plans for the following year. On average, a $1-a-cwt increase in the farm price brings about a production increase of 21 pounds per capita the following year. Similarly if prices fall by $1 a cwt, production the following year declines by 21 pounds per capita. This translates into a price elasticity of supply of 0.31. 3/ That is, a 1-percent increase in price caused a 0.3-percent increase in production. Potato farmers also responded to changes in the price of sugarbeets, a crop that can be grown on the same land with similar equipment. For each 10-percent increase in the price of sugarbeets, farmers decreased total potato production by 1 percent.

Potato consumption shifted toward processed products and away from fresh potatoes due to the changes in consumer incomes and habits already discussed. However, the price of fresh potatoes was not significant in determining consumption. Fresh potatoes are such a small proportion of food budgets that consumer seem to purchase a constant amount irrespective of price changes.

Processed potatoes, however, are quite responsive to price changes. Furthermore, consumption of fresh potatoes responds to changes in processed potato prices, increasing 0.34 percent for each 1-percent increase in processed prices. These relationships reveal that consumers have a strong preference for processed potatoes over fresh ones, but that

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2/ Market share refers to the percentage of total sales provided by the four largest firms. A 0.15-percentage-point increase in market share would represent a movement, for example, from 60.0 percent to 60.15 percent.

3/ Price elasticity of supply is a number stating the percent change in potato production in response to a 1-percent change in potato price.

they do switch to fresh potatoes when significant increases occur in price for processed potato products.

Prices of fresh potatoes at the farm and at retail fluctuated widely during the past three decades. Although farm prices respond inversely to production, these changes are transmitted imperfectly to retail. Thus retail potato prices are less responsive to changes in production than are farm prices.

The price spreads for processed potatoes widened over time. Each $1 change in the wholesale price resulted in a $1.70 change in the retail price. This suggests that all price changes at wholesale, plus a retail mark-up, were passed on to retail consumers.

Significant changes in the institutions handling potatoes are not captured in the statistical model used to analyze the industry. At the farm, producers greatly reduced their sorting, packing, and storage of potatoes. These services diminished in importance as large processors and grocery chains diversified to perform them. Additionally, procurement of potatoes through contracts reduced the number of shippers and brokers handling potatoes at the wholesale level. Reduced demand for shippers and brokers also occurred at the retail level as many processors initiated a plant-to-customer distribution network.

Contracting, Bargaining, and Advertising

Other major changes in the potato industry during the past 30 years include increased forward contracting, producer-processor bargaining, and generic advertising. To reduce price and yield risks, potato processors began advancing forward contracts to producers. Processors tend to contract with large producers more than with small producers because the average cost of contract service is less expensive on large acreage. To obtain potatoes with desirable processing characteristics, processors often provide technical assistance to producers as part of preseason contracts. The tendency to contract with large producers may have put some smaller producers at a competitive disadvantage and contributed to increases in farm size.

The decreasing number of potato processors left many growers with only two or three buyers for their potatoes and, therefore, in a poor bargaining position. In some instances the inequality in bargaining position led producers to form bargaining associations to negotiate contract terms with processors. The result has been greater equality of prices among producers and perhaps increased quality control in growing, handling, and storing potatoes.

On the marketing side, the industry instituted a revenue earning tax to promote increased potato consumption through generic advertising and promotion. Advertising expenditures have proven effective in expanding potato consumption. The Research and Promotion Act of 1971 provides for a withholding of 2 cents a cwt on all food and seed potatoes sold. Fresh potato sales have increased substantially in selected retail markets featuring generic potato promotion. However, it is difficult to assess the effects of the industry's generic advertising because expenditures are so small in relation to brand name advertising expenditures.

Market Performance

Market performance, in the context of this paper, refers to the ability of the potato industry to satisfy consumer demand. As demand shifted from fresh to processed potatoes, the industry adapted to this shift by rapidly making processed products available. In fact, through advertising and other promotional efforts, the industry attempted to influence and accelerate the demand for processed potatoes. Accelerated demand growth, however, was not at the expense of product quality. The industry worked to improve the taste and nutrition of processed potatoes.

As a result of these efforts, innovative steam peeling methods were adopted that greatly diminished the loss of nutrients. Consumer surveys also suggest that significant improvements were made in the taste of processed products. Fresh potatoes also improved in quality as processors sorted "top grade" potatoes for the fresh market.

Adjustments in the industry to accommodate shifting demands did not result in increased profit margins. The potato processing industry appears to have followed a policy of growth rather than one to maximize the per unit profits. Although many processors went out of business, especially smaller ones, the remaining firms appear to represent an efficient industry. Through reduced production costs and improved efficiency, the changes occurring in potato processing seem to have enhanced market performance.

The industry has continually allocated money to the development of new products and technology. Adoption of new and improved technology was indeed a significant in the development and growth of processed potatoes.

However, growth of this sector is also associated with a decline of the fresh potato sector. This does not suggest, however, poor industry performance, which would have resulted had the industry continually supplied fresh potatoes when consumers demanded processed ones. Since the decline in fresh potato consumption appears related to consumer demands, the decline is not a detrimental result from society's viewpoint. The decline of fresh market participants--producers, brokers, shippers, etc. is a change associated with a more efficient industry, reallocating resources to accommodate changing consumer demands.

References

Cox, M. "A French Fry Diary: From Idaho Furrow To Golden Arches." *Wall Street Journal*. (February 8, 1982):1.

Jones, E. "An Econometric Model of Structural Changes in the U.S. Potato Industry." Ph.D. dissertation, University of Florida, 1984

Table 2.--Commercial vegetables and potatoes: Monthly average index of prices received by U.S. growers, 1983-84 1/

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
						1910-14=100							
Commercial 2/	1984	807	834	768	677	607	586	599	700	637	687	528	571
	1983	531	638	691	743	723	691	566	591	618	666	655	715
Fresh	1984	1,127	1,173	1,055	895	772	735	758	937	828	919	635	711
	1983	641	817	904	999	967	916	697	743	791	873	855	962
Potatoes, etc. 3/	1984	577	567	584	599	626	634	799	728	432	408	419	456
	1983	315	327	354	399	463	463	545	608	470	413	467	515
						1977=100							
Commercial 2/	1984	162	167	154	136	122	118	120	141	128	138	106	115
	1983	107	128	139	149	145	139	114	119	124	134	132	144
Fresh	1984	171	178	160	136	117	112	115	142	126	140	96	108
	1983	97	124	137	152	147	139	106	113	120	133	130	146
Potatoes 3/	1984	159	156	161	165	173	175	220	201	119	113	116	126
	1983	87	90	98	110	128	128	150	168	130	114	129	142

1/ 1984 indexes are preliminary. 2/ Includes fresh and processing vegetables
3/ Includes Irish potatoes, sweet potatoes, dry edible beans.

SOURCE: Statistical Reporting Service, USDA

Table 3.--Fresh vegetables: Monthly average prices received by U.S. growers, 1983-84 1/

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
						Dollars per cwt							
Carrots	1984	14.40	17.40	16.40	16.80	13.30	12.80	12.20	14.10	14.20	12.90	12.60	12.00
	1983	12.20	12.40	10.90	9.72	10.80	11.20	15.80	16.80	15.50	14.40	14.30	14.40
Celery	1984	22.90	21.70	14.40	12.20	13.30	9.83	8.24	9.30	8.92	9.31	11.20	8.73
	1983	7.65	8.14	9.83	20.50	20.00	14.10	11.00	12.90	13.10	12.10	16.70	19.30
Corn, Sweet	1984	29.10	27.60	20.90	16.60	13.40	12.40	13.90	12.00	12.20	11.60	12.00	13.90
	1983	19.20	23.70	24.40	17.60	12.90	11.10	14.00	11.60	11.10	12.30	10.80	14.40
Lettuce	1984	8.86	9.45	9.13	7.40	7.36	9.20	9.31	14.40	14.90	20.30	7.82	10.70
	1983	9.60	8.54	8.27	12.40	14.90	17.50	8.68	11.10	13.30	16.10	13.90	14.90
Onions	1984	19.40	19.60	25.60	25.30	14.00	11.50	13.90	13.30	11.30	9.59	10.00	11.70
	1983	5.13	6.35	7.59	10.70	10.60	9.62	10.70	10.90	10.80	11.00	13.70	18.80
Tomatoes	1984	40.20	44.00	34.80	25.00	27.60	25.50	25.80	34.10	22.30	22.50	18.10	19.00
	1983	18.60	37.30	46.00	39.40	32.20	26.60	19.20	17.70	19.00	22.20	20.50	19.40

1/ 1984 prices are preliminary.

SOURCE: Statistical Reporting Service, USDA

Table 4.--Vegetables: Index 1/ of producer prices, 1983-84

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fresh 2/	1984	263.8	311.5	311.9	225.9	183.2	205.8	198.5	218.2	206.9	191.1	161.8	150.9
	1983	181.9	177.6	205.5	230.6	220.5	228.5	185.0	201.1	219.5	257.1	205.5	207.4
Canned	1984	255.7	254.5	258.7	256.3	257.8	254.7	252.4	256.6	246.3	250.4	242.8	245.0
	1983	242.7	242.7	243.2	241.6	243.0	247.4	246.7	248.9	248.5	254.3	249.9	255.7
Frozen	1984	285.4	283.6	3/	289.3	289.6	292.1	293.0	293.5	293.3	293.4	294.0	292.6
	1983	285.3	283.6	283.3	284.2	283.2	283.7	283.9	284.5	283.6	281.9	283.8	282.8

1/ Producer Price Index (PPI). 2/ Excluding potatoes. 3/ Not available.

SOURCE: Bureau of Labor Census, Department of Labor.

Table 5.--Vegetables: Indexes 1/ of consumer prices, 1983-84

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
							1967=100						
Fresh Vegetables 2/	1984	363.6	386.6	385.4	347.4	316.8	317.1	318.8	338.7	302.3	306.0	304.4	294.8
	1983	270.0	273.4	294.0	316.0	320.8	311.3	295.8	293.8	297.2	305.5	297.4	316.6
Potatoes 2/	1984	342.3	359.6	363.5	367.3	372.1	391.4	455.6	478.1	354.1	324.3	313.1	327.3
	1983	236.2	240.6	241.1	258.7	282.3	304.7	320.7	342.2	336.1	316.9	305.0	317.6
Lettuce 2/	1984	328.3	278.5	290.5	244.4	234.1	262.6	246.0	316.6	337.8	363.6	350.5	276.0
	1983	301.3	249.0	247.9	316.0	340.9	363.5	280.5	293.9	337.0	360.4	329.8	371.8
Tomatoes 2/	1984	285.6	332.8	318.5	280.4	252.8	262.3	237.3	310.4	252.9	255.1	245.3	232.4
	1983	236.8	265.0	252.2	327.5	307.8	262.3	243.1	200.5	212.2	241.9	243.0	222.2
Other 3/	1984	226.1	252.1	249.4	218.9	187.4	174.6	167.1	157.1	152.1	158.7	164.3	167.4
	1983	156.0	165.6	175.8	186.9	184.1	169.4	167.6	163.6	158.0	163.0	163.0	177.2
Processed Vegetables 3/	1984	144.2	144.6	144.9	145.6	146.0	146.5	147.2	148.1	146.9	146.5	146.1	146.5
	1983	137.9	137.9	138.1	137.7	137.9	138.7	139.0	140.2	140.6	141.1	141.8	142.8

1/ Consumer Price Index (CPI-U). 2/ 1967=100. 3/ 1977=100.

SOURCE: Bureau of Labor Statistics, Department of Labor.

Table 6.--Potatoes, sweet potatoes, dry edible beans: Monthly average prices received by U.S. growers, 1983-84 1/

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
							Dollars per cwt						
Potatoes	1984	6.43	6.28	6.55	6.69	7.04	7.52	9.81	8.77	4.69	4.28	4.45	4.91
	1983	3.53	3.69	4.07	4.65	5.52	5.33	6.36	7.03	4.94	4.14	4.87	5.46
Sweetpotatoes	1984	16.50	18.10	19.50	20.20	23.00	12.60	14.40	15.30	11.40	11.40	12.40	15.90
	1983	8.78	9.29	9.24	9.17	7.43	12.50	10.90	12.20	11.00	9.91	11.40	14.30
Dry Edible Beans	1984	22.10	21.30	20.30	21.10	20.40	20.60	21.60	21.10	19.00	19.20	19.20	18.10
	1983	12.00	11.90	12.30	13.40	15.50	15.60	19.30	22.30	24.00	23.90	24.20	24.30
Green Peas	1984	9.00	8.80	8.95	9.00	8.95	9.20	9.15	8.80	8.40	8.25	8.40	8.25
	1983	8.95	8.55	9.05	9.30	9.25	9.50	9.90	9.00	9.00	9.15	9.00	9.00
Yellow Peas	1984	7.70	7.75	7.50	7.40	7.75	7.30	7.50	7.50	7.90	8.20	8.45	8.60
	1983	8.00	7.75	7.95	8.55	8.75	8.65	8.40	8.00	8.00	8.10	7.90	7.65
Lentils	1984	15.20	15.00	14.90	14.25	14.35	14.55	15.25	19.75	24.65	28.40	29.50	28.65
	1983	13.05	12.15	12.05	12.30	12.05	12.25	14.40	15.50	15.20	16.30	15.95	15.25

1/ 1984 prices are preliminary.

SOURCE: Staistical Reporting Service, USDA

Table 7.--Processed vegetables: Wholesale prices of selected items 1/, 1984-85

Commodity	Jan. 1984	Jan. 1985	1985 as a percent of 1984
	$ per case		
CANNED VEGETABLES:			
Snap beans			
24/303	6.50	6.75-7.00	105
6/10	9.75	10.00	103
Sweet corn			
24/303	8.25	6.50-6.75	80
6/10	12.25-13.00	9.50-9.75	76
Green peas			
24/303	8.50-9.50	8.75-9.00	99
6/10	12.75-13.25	13.25-13.50	103
Whole tomatoes			
24/303	7.93	7.25	91
6/10	12.05	11.00-11.50	93
Tomato paste			
6/10	23.10	18.00	78
55-gal. drums (cents/lb.	.56	.56	100
FROZEN VEGETABLES 1/:			
Snap beans			
Retail	7.95	8.35	105
Foodservice	.45-.50	.50-.52	108
Sweet corn, cut			
Retail	7.80	7.80	100
Foodservice	.49	.49	100
Sweet corn, cob			
Retail	9.75-10.00	7.80	79
Foodservice	8.00-8.50	9.85	119
Green peas			
Retail	8.20	8.20	100
Foodservice	.51	.51	100
Broccoli, spears			
Retail	9.95-10.25	9.95-10.50	101
Foodservice	.50-.57	.52-.57	102

1/ Retail-size prices are dollars per case of 24/10-ounce (or 9-ounce) packages. Foodservice case prices are in terms of dollars per pound for 12/2-1/2-pound packages.

SOURCE: American Institute of Food Distribution.

Table 8.--Fresh vegetables: Retail price, marketing margin, and grower-packer return per unit, sold in Baltimore, indicated months, 1983-84

Commodity, month, and retail unit	Retail price	Marketing margin		Grower-packer return 1/	
		Absolute	Percent of retail price	Absolute	Percent of retail price
		Cents	Percent	Cents 2/	Percent
Carrots (lb.)					
November 1983	37.0	23.6	64	13.4	36
November 1984	42.0	31.3	75	10.7	25
October 1984	37.0	23.1	62	13.9	38
Celery (lb.)					
November 1983	39.1	20.3	52	18.8	48
November 1984	30.1	8.9	30	21.2	70
October 1984	30.1	23.4	78	6.7	22
Lettuce (head)					
November 1983	74.0	48.2	65	25.8	35
November 1984	109.0	90.4	83	18.6	17
October 1984	98.0	55.7	57	42.3	43
Onions, dry yellow (lb.)					
November 1983	35.0	20.9	60	14.1	40
November 1984	30.0	22.0	73	8.0	27
October 1984	27.0	17.2	64	9.8	36
Potatoes, round white (lb.)					
November 1983	16.9	6.3	37	10.6	63
November 1984	15.9	9.5	60	6.4	40
October 1984	18.4	12.0	65	6.4	35
Potatoes, Russet (lb.)					
November 1983	47.0	29.8	63	17.2	37
November 1984	47.0	37.4	80	9.6	20
October 1984	55.0	46.7	85	8.3	15
Sweetpotatoes (lb.)					
November 1983	40.0	18.0	45	22.0	55
November 1984	48.0	26.6	55	21.4	45
October 1984	48.0	28.2	59	19.8	41

1/ Production areas: Carrots-California; Celery-California; Lettuce-California; Onions-New York; Potatoes, round white-New York; Potatoes, Russet-Idaho; and Sweetpotatoes-North Carolina. 2/ Adjusted to account for waste and spoilage during marketing.

Source: Maryland State University, Dept. of Agriculture and U.S. Dept. of Agriculture, Agricultural Marketing Service, "Weekly Summary of F.O.B. Prices

Table 9.--Frozen vegetables: Cold storage holdings, 1983-85

Commodity	Jan. 1			1985 as percent of 1984
	1983	1984	1985 1/	
	Million pounds			
Percent				
Asparagus	6	9	6	67
Lima beans	62	75	87	116
Snap beans	178	204	212	104
Broccoli	84	107	71	66
Brussels sprouts	51	45	39	87
Carrots	150	122	186	152
Cauliflower	58	70	71	101
Sweet corn	353	558	543	97
Mixed vegs.	43	53	49	92
Okra	29	52	48	92
Onions	28	32	29	90
Blackeyed peas	11	12	12	100
Green peas	180	247	229	93
Peas and carrots	10	11	10	91
Spinach	63	53	42	79
Squash	37	45	43	96
So. greens	30	53	42	79
Other vegs.	201	191	180	94
Total 2/	1,574	2,029	1,899	93
Potatoes	689	767	773	101
Total 2/	2,263	2,796	2,672	96

1/ Preliminary. 2/ May not add to total because of rounding.

SOURCE: Cold Storage, SRS, USDA.

Table 10.--Fresh vegetables: Acreage, production, and value, 1982-84

Commodity	Harvested acreage			Production			Value		
	1982	1983	1984 1/	1982	1983	1984 1/	1982	1983	1984 1/
	1,000 acres			1,000 cwt			1,000 dollars		
Broccoli 2/	92.0	91.8	100.1	8,819	8,349	10,391	211,086	210,774	246,838
Carrots 2/	79.4	80.3	81.2	23,420	22,638	22,595	198,418	208,608	237,983
Cauliflower 2/	51.1	55.1	57.3	5,353	5,491	6,477	130,796	143,176	178,976
Celery 2/	36.4	34.8	38.6	19,139	18,287	20,577	194,280	250,239	261,010
Sweet corn	176.3	183.3	185.9	13,696	14,317	14,998	167,548	178,803	197,074
Honeydews	24.9	23.8	23.1	3,780	3,918	4,009	53,111	51,540	56,336
Lettuce	215.1	227.7	225.0	62,777	63,231	64,398	755,496	788,892	732,868
Onions 2/3/	125.2	121.5	126.0	41,637	38,370	41,611	306,371	427,997	405,553
Tomatoes	120.4	124.4	125.3	26,973	27,402	26,441	608,983	660,247	683,584
Total 4/	920.8	942.7	962.5	205,594	202,003	211,497	2,626,089	2,920,276	3,000,222

1/ Preliminary. 2/ Includes quantities used for processing. 3/ Value exceeds production not marketed because of shrinkage and loss. 4/ May not add because of rounding.

SOURCE: Vegetables Annual, SRS, USDA.

Table 11.--Processing vegetables: Acreage, production, and value, 1982-84

Commodity	Harvested acreage			Production			Value		
	1982	1983	1984	1982	1983	1984	1982	1983	1984
	1,000 acres			1,000 tons			1,000 Dollars		
Beans, snap									
Canning	144	140	154	451	409	465	70,910	62,554	74,840
Freezing	60	57	62	194	178	202	35,700	31,702	39,272
Corn, sweet 2/									
Canning	291	266	285	1,614	1,325	1,592	92,204	77,203	98,124
Freezing	157	132	144	1127	886	972	75,961	54,897	64,663
Peas, green 1/									
Canning	151	158	172	266	221	250	57,147	48,694	57,292
Freezing	153	151	159	231	205	246	55,394	43,495	59,997
Tomatoes	295	292	292	7,299	7,030	7,680	522,422	480,926	517,278
Total	1,250	1,196	1,268	11,180	10,254	11,407	909,738	799,471	911,466

1/ Production and price on a shelled basis. 2/ Corn in the husk. 3/ May not add to total because of rounding.

SOURCE: Vegetables Annual, CRB, SRS.

Table 12.--Dry edible beans: Production in selected States, by major classes, 1983-84

Type	State									Total	
	MI	ID	WY	NE	WA	CO	NY	CA	Other 1/	1984 2/	1983
	1,000 cwt										
Peas, navy	3,591	--	--	--	--	--	--	--	1,375	4,966	4,618
Great northern	--	230	42	2,132	--	--	--	--	--	2,404	1,940
Pinto	21	1,147	717	882	214	2,096	--	--	2,092	7,169	4,372
Red kidney	250	34	--	--	--	--	288	741	76	1,389	997
Small red	--	177	--	--	168	--	--	--	--	345	302
Large lima	--	--	--	--	--	--	--	630	--	630	463
Baby lima	--	--	--	--	--	--	--	529	--	529	472
Small white 3/	140	227	--	--	240	--	--	39	--	646	381
Blackeye	--	--	--	--	--	--	--	840	--	840	623
Other	9	72	--	216	33	165	50	120	67	732	333
Pink	--	583	--	--	52	--	--	186	20	841	639
Cranberry	140	--	--	--	--	--	--	--	--	140	285
Garbanzo	--	--	--	--	--	--	--	14	--	14	47
Black turtle soup	22	--	--	--	--	--	87	--	--	109	48
U.S. total	4,173	2,470	759	3,230	707	2,261	425	3,099	3,630	20,754	15,520

1/ Includes Illinois, Indiana, Kansas, Minnesota, Montana, New Mexico, North Dakota, and Utah. 2/ Preliminary. 3/ Includes flat small white.

SOURCE: Crop Production, Annual Summary, SRS, USDA.

Table 13.--Beans, dry edible: Production by commercial classes 1/, 1979-84

Class	1979	1980	1981	1982	1983	1984 2/
	1,000 cwt					
White:						
Pea, navy	5,858	5,717	5,550	7,937	4,618	4,966
Great Northern	1,998	2,112	2,686	2,896	1,940	2,404
Small white 3/	190	186	312	257	381	646
Total, white	8,046	8,015	8,548	11,090	6,939	8,016
Colored:						
Pink	817	1,750	1,941	880	639	841
Pinto	6,051	10,008	14,029	7,217	4,372	7,169
Red kidney	1,602	1,757	1,542	2,027	997	1,389
Small red	506	646	610	529	302	345
Cranberry	310	330	320	420	285	140
Black turtle soup	288	1,451	2,244	259	48	109
Total, colored	9,574	15,942	20,686	11,332	6,643	9,993
Lima:						
Large	529	758	639	580	463	630
Baby	656	447	661	530	472	529
Total, lima	1,185	1,205	1,300	1,110	935	1,159
Other:						
Blackeye	943	698	875	1,050	623	840
Garbanzo	152	67	50	60	47	14
Other 4/	573	468	724	921	333	732
Total, other	1,668	1,233	1,649	2,031	1,003	1,586
United States	20,473	26,395	32,183	25,563	15,520	20,754

1/ Excludes beans grown for garden seed. 2/ Preliminary. 3/ Includes flat small white. 4/ Includes yelloweye.

SOURCE: Crop Production, SRS, USDA.

Table 14.--Canned vegetables: Carryover, pack, seasonal supply, and disappearance, 1979-85

Commodity and season	Carry-over	Pack	Seasonal supply	Total seasonal shipments
	Million cases, 24/303's			
Lima beans				
1979/80	.5	3.1	3.6	3.0
1980/81	.6	2.8	3.4	2.8
1981/82	.7	2.6	3.3	2.7
1982/83	.5	2.3	2.8	2.5
1983/84	.3	2.3	2.6	2.2
1984/85	.4			
Snap beans				
1979/80	6.2	66.3	72.5	61.2
1980/81	11.3	60.9	72.2	56.3
1981/82	15.9	52.8	68.7	56.3
1982/83	12.4	48.8	61.2	53.2
1983/84	8.0	46.5	54.5	
1984/85				
Beets				
1979/80	2.9	15.0	17.9	11.2
1980/81	6.7	11.3	18.0	12.2
1981/82	5.8	9.6	15.4	11.3
1982/83	4.1	11.0	15.1	10.8
1983/84	4.3	9.0	13.0	10.2
1984/85	2.8			
Sweet corn				
1979/80	9.8	60.0	69.8	60.1
1980/81	9.6	50.6	60.2	55.5
1981/82	4.7	57.9	62.6	55.3
1982/83	7.3	60.5	67.8	56.6
1983/84	11.2	51.6	62.8	54.4
1984/85	8.4			
Green peas				
1979/80	1.6	36.5	38.1	31.9
1980/81	6.2	30.1	36.3	30.1
1981/82	6.2	27.3	33.5	27.7
1982/83	5.8	24.8	30.6	27.3
1983/84	3.2	20.8	24.0	22.3
1984/85	1.7	23.3	25.0	
Sauerkraut				
1979/80	2.2	12.8	15.0	12.6
1980/81	2.4	11.3	13.7	11.7
1981/82	2.0	13.3	15.3	12.1
1982/83	3.2	10.7	13.9	9.5
1983/84	4.2	9.7	13.9	12.8
1984/85	1.1			
Tomatoes				
1979/80	14.6	52.9	67.5	55.2
1980/81	12.3	53.1	65.4	55.2
1981/82	10.3	51.9	62.2	53.6
1982/83	8.6	63.1	71.7	57.6
1983/84	14.1	61.6	75.7	60.9
1984/85	14.8			
Total				
1979/80	37.8	246.6	284.4	235.3
1980/81	49.1	220.1	269.2	223.6
1981/82	45.6	215.4	261.0	219.1
1982/83	41.9	221.2	263.1	217.8
1983/84	45.5	201.5	246.8	213.5
1984/85	33.3			

1/ ERS projections.

SOURCE: National Food Processors Association and National Kraut Packers Association.

Table 15.--Frozen vegetables: Carryover, pack, seasonal supply, and disappearance, 1979-85

Commodity and season	Carry over	Pack	Seasonal Supply	Total shipments
	Million pounds			
Broccoli				
1979/80	60.2	298.6	358.8	280.1
1980/81	78.7	290.7	369.4	293.1
1981/82	76.3	306.8	383.1	327.6
1982/83	55.5	335.5	391.0	302.5
1983/84	88.5	285.4	373.9	311.8
1984/85	62.1			
Lima beans				
1979/80	42.3	124.3	166.6	108.0
1980/81	58.6	85.9	144.5	120.5
1981/82	24.0	88.8	112.8	98.8
1982/83	14.0	123.7	137.7	110.3
1983/84	27.4	85.2	112.6	79.9
1984/85	32.7			
Snap beans				
1979/80	73.4	273.3	346.8	255.6
1980/81	91.2	243.9	335.1	254.3
1981/82	80.9	257.4	338.3	269.5
1982/83	68.7	293.3	362.1	275.7
1983/84	86.4	248.7	335.0	253.5
1984/85	81.5			
Cauliflower				
1979/80	44.3	101.1	145.4	104.8
1980/81	40.6	84.8	125.4	97.8
1981/82	27.6	105.2	132.8	109.5
1982/83	23.3	111.6	134.9	98.6
1983/84	36.3	100.5	136.8	105.7
1984/85	31.1			
Carrots				
1979/80	75.6	263.1	338.7	245.2
1980/81	93.5	191.2	284.7	227.3
1981/82	57.4	269.8	327.2	252.2
1982/83	75.0	296.7	371.7	228.9
1983/84	142.8	212.5	355.3	258.6
1984/85	96.7			
Sweet corn				
1979/80	154.8	580.1	734.9	614.6
1980/81	120.3	529.1	644.4	594.6
1981/82	54.8	619.4	674.2	610.2
1982/83	64.0	834.3	898.3	706.0
1983/84	192.3	661.2	853.5	729.0
1984/85	124.5			
Green peas				
1979/80	82.9	427.5	510.4	387.9
1980/81	122.5	315.6	438.1	369.2
1981/82	68.8	333.9	402.7	347.7
1982/83	55.0	404.8	459.8	367.3
1983/84	92.5	354.5	447.0	364.5
1984/85	82.5			
Spinach				
1979/80	19.1	181.3	200.4	170.0
1980/81	30.3	169.3	199.6	166.6
1981/82	33.1	183.6	216.7	176.0
1982/83	40.7	150.7	191.4	162.7
1983/84	28.7	143.2	171.9	146.7
1984/85	25.2			
Total				
1979/80	552.6	2,249.3	2,802.0	2,166.3
1980/81	635.7	1,910.5	2,546.2	2,123.3
1981/82	422.9	2,164.9	2,587.8	2,191.5
1982/83	396.3	2,550.6	2,946.9	2,252.0
1983/84	694.9	2,246.3	2,451.0	2,220.0
1984/85	536.3			

1/ ERS projections.

SOURCES: Carryover, Statistical Reporting Service; Pack, American Frozen Food Institute.

Table 16.--Fresh vegetables: U.S. shipments 1/ July 1-December 29, 1984

Commodity	July 1 to July 2	July 29 to Sept. 1	Sept. 2 to Sept. 29	Sept. 30 to Oct. 27	Oct. 28 to Dec. 1	Dec. 2 to Dec. 29
			1,000 cwt			
Snap beans	44	18	15	86	151	172
Broccoli	423	438	398	357	557	583
Cabbage	271	994	765	557	740	896
Carrots	869	785	668	655	914	770
Cauliflower	260	218	254	329	390	365
Celery	1,019	1,190	992	1,090	1,851	1,559
Sweet corn	606	572	174	167	203	107
Cucumbers	254	460	446	470	970	748
Eggplant	38	11	5	30	125	87
Lettuce	4,559	5,458	4,281	4,040	6,013	3615
Onions 2/	2,113	2,256	2,321	2,301	3,185	2,206
Bell pepper	346	285	373	310	644	603
Potatoes 3/	6,509	10,193	7,905	8,508	11,211	9,032
Squash	40	10	9	58	307	356
Sweetpotatoes	52	109	253	319	668	471
Tomatoes 4/	1,631	1,306	1,536	1,851	2,748	2,035
Cantaloups	3,156	2,832	1,333	443	315	26
Honeydews	719	1,066	666	148	196	37
Watermelons	5,502	2,395	151	11	60	99
Total	28,411	30,659	22,545	21,730	31,248	23,767

1/ Includes imports, exports, and domestic transfer. 2/ Includes only dry onions. 3/ Includes fresh, chipper, and seed potatoes. 4/ Includes cherry tomatoes.

SOURCE: Agricultural Marketing Service, USDA.

Table 17.--Potatoes: January 1 total stocks by areas, 15 major States, 1974-84

Crop year	Eastern States	Central States	Western States	Total 1/
		Million cwt		
1974	34.5	35.0	90.6	160.1
1975	26.5	27.4	102.4	156.2
1976	26.5	29.1	116.7	172.2
1977	28.1	36.7	110.5	175.3
1978	25.7	40.3	127.5	193.5
1979	29.4	33.7	112.9	176.0
1980	22.5	26.6	98.0	147.0
1981	26.0	33.9	105.9	164.4
1982	28.5	37.2	114.1	179.0
1983	22.0	35.9	107.5	165.3
1984	22.8	41.0	110.0	172.9

1/ May not add to total because of rounding.

SOURCE: Potato Stocks, SRS.

Table 18.--Potatoes: Processing use in major States 1/, 1977-85

Season	To January 1	Entire season
	1,000 cwt	
1977/78	47,730	123,975
1978/79	45,915	124,265
1979/80	41,745	115,645
1980/81	41,325	99,950
1981/82	51,750	127,000
1982/83	48,710	122,750
1983/84	48,115	121,055
1984/85	58,800	

1/ Includes Idaho, Washington, Oregon, Maine, North Dakota, Minnesota, and Michigan during 1977/78 through 1980/81. Also includes Wisconsin beginning in 1981/82.

SOURCE: Potatoes and Sweetpotatoes, Annual and Estimated Potato Stocks, SRS.

Table 19: Pulses: U.S. exports, 1981-84

Crop/variety	Total seasonal 1		
	1981/82	1982/83	1983/84
	Million pounds		
Dry beans			
Navy	177.0	196.5	139.0
Great Northern	154.8	151.8	84.9
Pinto	845.8	32.3	55.1
Other	487.0	196.6	198.6
Total	1,664.6	577.2	477.9
Dry peas	237.7	307.5	290.4
Lentils	158.7	110.1	78.0
Total pulses	2,061.0	1,572.0	1,324.2

1/ September to August crop year.

SOURCE: Bureau of Census, Dept. of Commerce.

Table 20.--Canned mushrooms: Imports, total and selected countries, 1982-84

Countries	July-June 1982-1983	July-June 1983-1984	July-Dec. 1983	July-Dec. 1984
	Million pounds			
China, Peoples' Republic of	42.9	44.1	14.9	15.6
China, Republic of (Taiwan)	41.2	51.3	20.9	26.9
Hong Kong	16.8	20.8	6.2	7.8
Korea, Republic of	7.3	10.5	2.5	3.7
Other	5.2	20.7	4.3	10.5
World total	113.4	147.4	48.8	64.5

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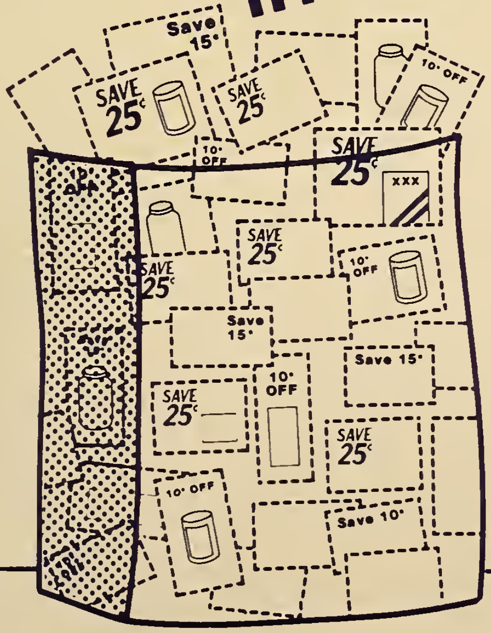

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